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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,074	02/03/2004	Joel F. Zuhars	137782 (MHM - 15221US01)	1973
23446 7590 09/18/2007 MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661			EXAMINER BITAR, NANCY	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 09/18/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<p align="center"><b>Office Action Summary</b></p>	Application No. 10/771,074	Applicant(s) ZUHARS ET AL.	
	Examiner Nancy Bitar	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date. <u>06/19/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Applicant's response to the last Office Action, filed 03/20/2007, has been entered and made of record.

2. Applicant has amended claims 1-3,5,10,13-15,18,20. Claim 4 has been canceled. Claims 1-3,5-20 are currently pending.

3. Applicant's arguments, in the amendment filed 06/19/2007, with respect to the rejections of claims 1-20 under 35 U.S.C. 102(e) have been fully considered but are moot in view of the new ground(s) of rejection necessitated by the amendments. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Filler et al (2001/0051881).

4. Applicant argues that Strobel does not teach scrolling through a set of images to create an animation. Rather, as discussed above, Strobel teaches the display of a three-dimensional volume reconstructed from two or more registered two-dimensional images, and claims 1 and 10 have been amended to recite the creation of an "animation by scrolling" through a set of images.

In response, Strobel teaches the presentation of the picture element at a monitor that defines the position as well the orientation (step VI, figure 1) but does not exactly teach the animation of images by scrolling which can be done on the display. Nevertheless, Examiner has added Filler et al ( 2001/0051881) reference in order to be more accurate. Filler teaches a live medical record is figure 15 a composite screen 1500 that includes a navigational view that contains a navigation links 1110 provided as is a

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scroll bar 1506, wherein by selections through clicking or even just by passing a cursor over the particular selectable link can make regions light up or can drive the floating box, trigger animation, cause new windows to open showing additional data, or any other dynamic or static HTML action. Note that the patient imaging of Filler includes motion fluoroscopy. Therefore, the animation process of filler would be obvious to be used on the display of Strobel In order to make user interfaces more usable, the user can rely on an explicit overview of the whole system with a better visualization skills.

5. All remaining arguments are reliant on the aforementioned and addressed arguments and thus are considered to be wholly addressed herein.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3,5-20 are rejected under 35 U.S.C. 103(a) as being anticipated by Strobel et al (US 7050844) in view of Filler et al ( 2001/0051881).

As to claim 1, Strobel et al. teaches a method of performing instrument tracking on an image (recognize the position of the instrument, column 2, lines 29-31) comprising:

collecting a plurality of images; computing at least one of a position and orientation of at least one instrument for said plurality of images (step V; coordinates of the two projection images that describe the position of the picture element in the image, figure 1, column 6, lines 3-11);

and displaying each image in said collected plurality of images to create an animation by scrolling through said plurality of images wherein said at least one position and orientation of said at least one instrument is projected on each said image (step VI; figure 1; presentation of the picture element at a monitor that defines the position as well the orientation).

While Strobel meets a number of the limitations of the claimed invention, as pointed out more fully above, Strobel does not specifically teach creating an animation by scrolling through the images. Specifically, Filler et al. teaches the use of teaches a live medical record in figure 15 a composite screen 1500 that includes a navigational view that contains a navigation links 1110 provided as is a scroll bar 1506, wherein by selections through clicking or even just by passing a cursor over the particular selectable link can make regions light up or can drive the floating box, trigger animation, cause new windows to open showing additional data, or any other dynamic or static HTML action. Note that the patient imaging of Filler includes motion fluoroscopy. It would have been obvious to one of ordinary skill in the art to use the animation by scrolling through the images in order help to make user interfaces more usable in Strobel presentation display in order the user can rely on an explicit overview of the whole system thus understanding and providing a better visualization skills and positional information.

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Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 2, Strobel et al. teaches the method of claim 1 wherein said plurality of images comprise a plurality of 2D fluoroscopic images (note that the radiation detectors 6, 7 are fashioned as x-ray image intensifiers or as flat image detectors, column 6, lines 34-38).

As to claim 3, Strobel et al. teaches the method of claim 2 comprising continuously scrolling through said plurality of images using a display (The reconstruction volume, i.e. the vessel tree 12, as well as the position of the catheter tip with the coordinates (x.sub.K, y.sub.K, z.sub.K), are then displayed at the monitor 9. The display is based on the common coordinate system (x, y, z). On the basis of this display, the physician can recognize the exact spatial position of the catheter tip in the three-dimensionally presented vessel tree 12, column 7, lines 39-45).

As to claim 5, Strobel et al. teaches the method of claim 1 comprising calibrating at least one image of said collected plurality of images such that said at least one position and orientation of said at least one image may be accurately displayed (FIG. 1 shows the executive sequence of the inventive method as a flow chart. In Step I, a calibration of the two C-arm systems with respect to a common coordinate system ensues first, with the two C-arm systems being moved into different positions around a calibration phantom, and the position-related projection matrices being acquired, column 5, lines 49-55).

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As to claim 6, Strobel et al. teaches the method of claim 5 comprising selecting at least one calibrated image to be a current image (On the basis of these two-dimensional projection images, the spatial coordinates of a selected picture element of these two images, namely of the tip of the catheter shown in the images, are determined in Step V, column 6, lines 3-21).

As to claim 7, Strobel et al. teaches the method of claim 6 comprising computing said at least one position and orientation for said at least one instrument for said current image (The determination of the coordinates and the actual image determination and output also is controlled with the image registration and calculating unit 8, column 6, lines 44-47).

As to claim 8, Strobel et al. teaches the method of claim 1 comprising collecting said plurality of images using at least one moveable collection device (the C-arm is moved into two different angular positions for registering the projection images with the image planes residing differently relative to one another. In this embodiment of the invention, thus, only one C-arm is present with which the angiography projection images are registered first, column 3, lines 45-61, note that the physician is presented with the continuously occurring displacement motion of the instrument position).

As to claim 9, Strobel et al. teaches the method of claim 8 wherein said moveable collection device comprises a C-arm coupled to an imaging device (C-arm system, column 4, lines 32-34).

The limitation of claim 10 has been addressed above except for the following “ performing instrument tracking on a series of 2 D images and repeating said selecting,

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computing and projecting and displaying steps to create an animation by scrolling through said series of 2D images ". Strobel teaches that limitation in (column 6, lines 39-47; a number of two-dimensional angiography projection images are thereby registered)

As to claim 11, Strobel et al. teaches the method of claim 10 comprising collecting said series of 2D images using a collection device that moves (the C-arm is moved into two different angular positions for registering the projection images with the image planes residing differently relative to one another. In this embodiment of the invention, thus, only one C-arm is present with which the angiography projection images are registered first, column 3, lines 45-61, note that the physician is presented with the continuously occurring displacement motion of the instrument position).

As to claim 12, Strobel et al. teaches the method of claim 11, wherein said collection device comprises a C-arm coupled to the imaging device (C-arm system, column 4, lines 32-34).

As to claim 13, Strobel et al. teaches the method of claim 10 wherein said series of 2D images comprise a series of 2D fluoroscopic images (note that the radiation detectors 6, 7 are fashioned as x-ray image intensifiers or as flat image detectors, column 6, lines 34-38).

As to claim 14, Strobel et al. teaches the method of claim 10 comprising continually scrolling through said series of 2D images in a display (FIG. 1 shows the executive sequence of the inventive method as a flow chart. In Step I, a calibration of the two C-arm systems with respect to a common coordinate system ensues first, with the two C-arm systems being moved into different positions around a calibration



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phantom, and the position-related projection matrices being acquired, column 5, lines 49-55).

As to claim 15, Strobel et al. teaches the method of claim 14 comprising projecting said at least one position and orientation of said at least one instrument into at least one image of said series of 2D images (spatial coordinates of a selected point of the instrument shown in the projection images are identified in a common coordinate system for the angiography projection images and the projection images, column 2, lines 40-51).

As to claims 16-17, Strobel et al. teaches the method of incrementing at least said current image and recomputing said at least one position and orientation of said at least one instrument (In order to then determine the x, y and z-coordinates of the catheter tip in the coordinate system (x, y, z) of the reconstruction volume, i.e. of the vessel tree 12, the known projection matrices describing the positions of the two C-arm systems 2, 3, as well as the image coordinates (u.sub.6, v.sub.6) and (u.sub.7, v.sub.7), are determined. The spatial coordinates (x.sub.K, y.sub.K, z.sub.K) describing the spatial position then can be calculated by matrix calculation, column 7, lines 30-38).

Claims 18-20 differs from claim 1 only in that claim 1 is a method claim whereas; claim 18 is an apparatus claim. Thus, claims 18-20 are analyzed as previously discussed with respect to claim 1 above.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nancy Bitar whose telephone number is 571-270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

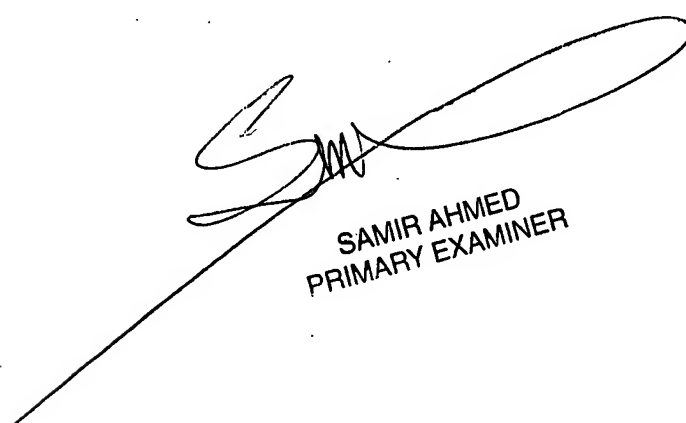
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nancy Bitar

09/01/2007



SAMIR AHMED  
PRIMARY EXAMINER